Appendix O
Interoperability Issue: System Evaluation Considerations

O–1. Overview of interoperability

OSD requires that all acquired systems be interoperable with other U.S. and allied systems, as defined in the requirements and interoperability documents. Interoperability issues will be considered in all early operational assessments and the T&E strategy.

a. The TEMP must include at least one CTP and one operational effectiveness issue for the evaluation of interoperability (see chap 3).

b. The system evaluator reviews the major documents that define the system's interoperability environment and monitors the major events that produce information on interoperability as well as compatibility. The following are the potential sources of interoperability information:

(1) Army Battlefield Interface Concept (ABIC) is produced by the CBTDEV, usually TRADOC, and identifies the intra-Army, inter-Service, and NATO systems architecture and associated interfaces. It serves as the primary document that defines the systems with which a developing system is expected to operate.

(2) User Interface Requirements (UIRs) are the documents developed by the CBTDEV and provide quantifiable data to characterize each required information exchange.

(3) Technical Interface Design Plans (TIDPs) are the technical design documents for each interface. They are developed by the Materiel Developer (MATDEV) and provide the technical interface parameters, message formats, message content, and implementation requirements.

(4) Interface specifications are developed by the MATDEV and provide detailed technical engineering information on system interfaces.

(5) Interface Control Documents (ICDs), developed by the MATDEV, describe the physical and electrical connections, voltage, and current requirements, and provide interface control drawings.

(6) Joint Interface Operating Procedures (JIOPs), developed by the MATDEV, describe the man-machine interfaces and standardized operating procedures for multiple interfacing systems. For these joint system interfaces, interoperability is guided by the appropriate military standards (MIL–STDs).

(7) For NATO system interfaces, interoperability is guided by Standardization Agreements (STANAGS).

(8) Interface Design Handbooks are developed in parallel with the system by the MATDEV in coordination with the user, and provide SOPs and user procedures relevant to the operation of the system under development.

(9) Information Exchange Requirements (IERs), developed by the CBTDEV in coordination with the MATDEV, describe the communications, data, and message exchange requirements as well as standardized procedures for multiple interoperating systems.

c. The ORD and ABIC enable the system evaluator to identify the interfacing systems and the systems for which interface is a concern. The ORD and UIRs are used to identify the factors and conditions that have the potential to impact the system's interoperability requirements. Compatibility issues are identified by the system evaluator based on review of the UIRs and the description of the environment from the ORD.

d. Joint systems must comply with the approved DOD Joint Technical Architecture (JTA) directive (see http://www-jta.itsi.disa.mil). The JTA was established at the direction of the Assistant Secretary of Defense (ASD) Command, Control, Communications, and Intelligence (C3I) in response to the recognition of the need for joint operations in combat given the reality of a shrinking budget. The JTA is binding on all DOD C4I acquisitions to ensure that they are both joint and interoperable. The JTA-Army is a subset of the JTA and provides a comprehensive set of standards required for both Intra-Army and joint interoperability. It provides the baseline of standards with which Army information technology capabilities will conform. Compliance with the JTA–A is mandated by 30 Sep 2006 for all Active, Reserve, and National Guard Army systems that produce, use, or exchange information electronically.

e. Other sources of information for the system evaluator concerning the overall interoperability of a system are test reports furnished to the PM by the Joint Interoperability Test Command (JITC). JITC functions as DOD's joint interoperability certifier. CECOM SEC APTU serves as the Army's focal point for the joint certification of Army systems and, as part of the APTU responsibilities, prepares these test reports. There are many references to specific software in the JTA that may be obsolete or not easily integrated into the software baseline. If so, it is incumbent upon the system evaluation to highlight this situation so it can be addressed by the respective CINC Interoperability Program Office (CIPO) or the Joint Forces Command.

O–2. Interoperability system evaluation planning

The interoperability KPP, along with other KPPs, critical technical parameters, and operational issues, is used to develop the TEMP. All systems will undergo interoperability certification testing (see chap 6) prior to the FRP decision review. Information assurance hardware and software capabilities are assessed for and must meet interoperability requirements. As joint interoperability certification authority, the JITC will be actively involved in the joint interoperability system evaluation planning effort. The Army interoperability certification authority is the HQDA (CIO/G–6). The CTSF at Fort Hood, TX, will be responsible for conducting all intra-Army interoperability testing. Prior to

joint certification, all Army systems must undergo Intra-Army Interoperability Certification at the CTSF and obtain Interoperability Certification by the HQDA (CIO/G–6).

a. Interoperability benefits typically manifest themselves in improvements to system performance metrics (see fig Q-1). Decreased time to perform a function, increased number of target opportunities, and more precise or timely information are examples of how interoperability can be quantified. These metrics are often expensive in that they require a base case against which to measure the increase or decrease in performance. Interoperability also enhances the warfighters' capability to minimize fratricide.

b. Interoperability also manifests itself in a negative way by increasing the time required to begin or complete missions. In addition, interoperability may require the handling and transport of additional equipment, as well as extra operators and maintainers. The system evaluator quantifies these effects and uses the metrics produced to provide a value judgment on the operational effectiveness of the system. The system evaluator must also address the time required to restore lost interoperability as well as the impact of the loss. When appropriate, interoperability shortfalls will be given an equal amount of emphasis and priority as internal system shortfalls.